

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement filed 9/4/2008 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because an English translation of the abstract of EP 0960956 has not been included. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

### ***Claim Objections***

2. Claims 4-16 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from a multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 4-16 not been further treated on the merits. For example, claim 3 is a dependent on claims 1 or 2. Claim 4 is dependent on claims 1, 2 or 3. This problem is repeated throughout claims 4-16. The examiner cannot establish the dependency of claims 4-16.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 3742

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Regarding claim 1, lines 4-5 recite "comprising titanium diboride (TiB<sub>2</sub>) and/or zirconium diboride (ZrB<sub>2</sub>)", which the examiner considers as indefinite because it is unclear if zirconium diboride (ZrB<sub>2</sub>) is included in the limitation. It is suggested to change "and/or" to either "and" or "or". Appropriate correction is required.
6. Claims 2 and 3 are also rejected because they dependent on claim 1.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alexander (US 2962,538) in view of Mandorf (US 3,181,968).

10. Regarding claim 1, Alexander teaches a metal evaporation heating element (Figs 3 & 4, Item 10, Col 3, Lines 33-37) characterized by having one or more grooves (Figs 3 & 4, Item 12a & 12b, Col 4, Lines 36-45) in a direction not in parallel with a current direction, on an upper surface of a ceramic sintered body (Figs 3 & 4, Item 10, Col 3, Lines 24-32, pre-sintered heating) comprising titanium diboride (Col 3, Lines 25-32, TiB<sub>2</sub>) and/or zirconium diboride (ZrB<sub>2</sub>), the groove has a width of from 0.1 to 1.5 mm (Figs 3 & 4, Item 12a & 12b, Col 3, Lines 45-50, 0.01 to 0.05 inch wide), a depth of from 0.03 to 1 mm (Col 3, Lines 45-50, 0.005 to 0.060 inch deep) and a length of at least 1 mm (Figs 3 & 4, Items 10 & 12, Col 3, Lines 38-43, width of 18 mm). Alexander discloses the claimed invention except for the ceramic body comprises titanium diboride and/or zirconium diboride (ZrB<sub>2</sub>), and boron nitride (BN).

11. In analogous art of method of metal vaporization, Mandorf discloses the ceramic body comprises titanium diboride and/or zirconium diboride (Col 2, Lines 4-10), and boron nitride (Fig 1, Col 2, Lines 35-56 & Col 3, Lines 1-20) for the purpose of providing evaporating vessels made conductive by the presence therein of a refractory material and having suitable electrical conductivity and resistance to molten aluminum (Col 2, Lines 4-10). It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the titanium diboride heating element of Alexander with the boron nitride of Mandorf for the purpose of providing evaporating vessels made

conductive by the presence therein of a refractory material and having suitable electrical conductivity and resistance to molten aluminum.

12. Regarding claim 2, Alexander teaches having at least two grooves with a distance of at most 2 mm (Figs 3 & 4, Item 12a & 12b, Col 3, Lines 45-50, 0.01 to 0.05 inch wide, 0.005 to 0.060 inch deep).

13. Regarding claim 3, Alexander teaches that the number of grooves is at least 10 (Figs 3 & 4, Item 12a & 12b).

### ***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to THIEN S. TRAN whose telephone number is (571)270-7745. The examiner can normally be reached on Mon-Friday, 8-5PM EST.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Application/Control Number: 10/579,717  
Art Unit: 3742

Page 6

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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11/4/2011

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